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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,616	07/25/2001	Tadao Endo	35.C15603	3459

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EXAMINER

GAGLIARDI, ALBERT J

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 03/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/911,616

Applicant(s)

ENDO, TADAO

Examiner

Albert J. Gagliardi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 14, line 25, "dare" should be --are--.

Appropriate correction is required.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claim 16 is objected to because of the following informalities:

The term "sources" in line 3 should be --source--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for one of the light sources being an LED, EL, cathode ray tube or a laser, does not reasonably provide enablement for both the light sources being so composed (one of the light sources must be an x-ray source and/or converter). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The examiner notes that one of the light sources must be an x-ray source and/or wavelength converter.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-11 and 15-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Regarding claims 1, 4-5, 8, 11, 16, 17 and 18, the claims recite the term "light source", but the nature and meaning of the term as used in the claims is unclear. The examiner notes that in some cases the term light source seems to mean a high energy x-ray source which includes image data, while in other cases it seems to mean a low energy light source such a visible source which does not include image data. The examiner also notes that, as suggested by Fig. 2 for example, the light source could also be the wavelength converter (202) that emits visible light that contains image data. The examiner also notes that the rays emitted by light source (201) do not actually contain any image data since no (patient-wise) modulation of the rays has occurred. As such, the exact nature of the recited light sources is unclear.

9. Regarding claims 1 and 15, while applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). The term "reading out" in claims 1 and 15 is used by the claim to mean "exposure" or "charge creation/storage" while the accepted meaning is "signal collection" or "charge collection" (see for example Kaifu (US 6,127,684) at Fig. 2-8).

10. Regarding claim 16, the term "image-pickup" is unclear. Additionally the failure to clearly identify the purpose of the first and second light sources operated during image-pickup periods and non-image-pickup periods further confuses the meaning. The use in combination with "reading out" suggests that it means something akin to "charge collection".

11. The remaining claims are indefinite due to their dependency.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-3, 5-7, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamayoshi *et al.* (US 6,160,260) in view of Mochizuki (US 5,777,335).

Regarding claim 1, *Yamayoshi* discloses (Figs. 3-5) a photoelectric conversion device comprising a photoelectric conversion substrate and a plurality of photoelectric conversion elements installed on the substrate (4); a light source (3); and wherein between a reading out period and a non-reading out period, the light source is turned on in the non-reading out period (see generally Fig. 3 -- the examiner noting that scintillator/light source (3) is turned on in conjunction with the x-ray pulse).

Although *Yamayoshi* does not disclose an outer casing, those skilled in the art appreciate that such outer casings (see, for example, *Mochizuki* at Fig. 1) for holding a photoelectric conversion substrate (2) and a light source (4) are well known and would have been a matter of routine design choice in order to protect the conversion device.

Regarding claim 2, *Yamayoshi* discloses a plurality of switching elements (T11, T12, for example).

Regarding claim 3, the use of amorphous silicon for the photoelectric conversion element and the switching elements is well known (see for example *Mochizuki* at col. 1, lines 26-37).

Regarding claim 5, *Yamayoshi* discloses that the light source emits light rays having a wavelength region within which the photoelectric conversion elements have light absorption (col. 3, lines 56-63).

Regarding claims 6 and 7, *Yamayoshi* discloses that the light source is a wavelength converter. The use of $\text{Gd}_2\text{O}_2\text{S}$ or CsI , for example, is well known and would have been an obvious design choice.

Regarding claim 17, the device suggested by *Yamayoshi* and *Mochizuki* (see explanation regarding claim 1 above) suggests a photoelectric conversion device comprising a substrate and a plurality of photoelectric conversion elements (2) and a light source (4); and an outer casing (suggestion of *Mochizuki*) housing the photoelectric conversion substrate (2) and the light source (4).

Regarding claim 18, those skilled in the art appreciate that it is well known and would have been an obvious design choice to allow light rays produced in the light source (which is also a wavelength converter) to be reflected from the top surface of the wavelength converter back towards the photoelectric conversion elements so as to allow for increased detection ability.

14. Claims 8-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamayoshi* in view of Agano (US 6,392,237)

Regarding claim 8, *Yamayoshi* discloses (Figs. 3-5) a photoelectric conversion device comprising a substrate and with a plurality of photoelectric conversion elements for conversion of incident light rays having image data (4); and a light source (3 and/or 1) for radiating light rays having image data.

Yamayoshi does not further disclose the use of an additional light source for radiating light rays having no image data.

Regarding the additional light source, *Agano* discloses that various functionally equivalent readout means including both TFT reading type and optical reading type are well known in the art (col. 1, lines 57-64). Absent some degree of criticality, it would have been obvious to a person of ordinary skill in the art to modify the device suggested by *Yamayoshi* so as to utilize an optical reading type readout means in view of the known functional equivalence thereof. Those skilled in the art appreciate that the modified device would inherently include an additional light source having no image data.

Regarding claims 9 and 10, *Yamayoshi* discloses that the light source is a wavelength converter. The use of $\text{Gd}_2\text{O}_2\text{S}$ or CsI , for example, is well known and would have been an obvious design choice.

Regarding claim 11, as best understood, at least one of the light sources may be an LED, EL, cathode ray tube or a laser (well known for use in optical readout means).

Regarding claim 12, *Yamayoshi* and *Agano* (see explanation regarding claim 8 above) suggests a photoelectric conversion device comprising a substrate and with a plurality of photoelectric conversion elements for conversion of incident light rays having image data (4); a light source for radiating light rays having no image data *Agano* -- col. 8, line 36-39); a radiation source (1) and a control means for independently controlling the radiation source and the photoelectric conversion device (see *Agano* at col. 6, lines 37-49 and *Yamayoshi* at Fig. 3).

Regarding claims 13 and 14, *Yamayoshi* discloses that the light source is a wavelength converter. The use of $\text{Gd}_2\text{O}_2\text{S}$ or CsI , for example, is well known and would have been an obvious design choice.

Regarding claim 16, *Yamayoshi* and *Agano* (see explanation regarding claim 8 above) suggests a driving method of an image data processing system comprising first and second light

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sources (*Agano* -- col. 8, line 36-39; *Yamayoshi* -- (1/3)); a semiconductor element having a semiconductor layer having an absorption region in a wavelength of the rays from the second light source (*Yamayoshi* -- col. 3, lines 56-63); radiating light rays of the first source during an image-pickup period and reading out data (inherent aspect of optical readout suggested by *Agano*); and radiating light rays of the second light source during a non-image pickup period (*Yamayoshi* -- Fig. 3).

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamayoshi* and *Mochizuki* as applied to claim 17 above, and further in view of *Endo et al.* (US 5,811,790).

Regarding claim 19, photoelectric conversion elements with the recited arrangement are known in the art (see for example *Endo* at Figs. 2-3). Absent some degree of criticality, the particular design of the photoelectric conversion elements is viewed as a matter of routine design choice depending on the needs of the particular application and would have been an obvious design choice in view of the known design.

Allowable Subject Matter

16. Claims 4 and 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter:

Regarding dependent claims 4 and 15, as best understood, the prior art does not disclose or fairly suggest the light source (such as an LED, EL, etc.) is operated during the non-reading out period (*Yamayoshi* suggests the light source operated during the non-reading out period is an x-ray source or a photo-luminescent source).

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Conclusion

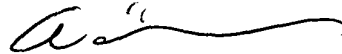
18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert J. Gagliardi whose telephone number is (703) 305-0417.

The examiner can normally be reached on Monday thru Friday from 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Albert J. Gagliardi
Examiner
Art Unit 2878

AJG
March 6, 2003